

Application No.: 10/811,899

Amendments to the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (Currently Amended): A fuel cell ~~characterized by having~~ comprising:
an electrode structure including a cathode, an anode and an electrolyte between the
cathode and the anode;
a fuel gas passage configured to conduct fuel to the anode;
an air passage configured to conduct air to the cathode;
a separator configured to supply the fuel to the fuel gas passage; and
a pure water channel comprising configured to allow flow of pure water and permit the
pure water to pass into the separator, the pure water channel including polymers respectively
having polymer chains, wherein one end of the polymer chains are being connected to a surface
of said the pure water channel; and said polymer chains can form capable of forming an
entanglement among themselves.

2 (Currently Amended): The fuel cell of Claim 1 ~~is characterized by a structure that,~~
wherein the flow of the pure water in the said pure water channel is stopped when the fuel cell is
shut down, and pure water flows in the said pure water channel when the said fuel cell is
operated, and the said polymer entanglement of the polymer chain is broken up by the flow of
pure water.

3 (Currently Amended): The fuel cell of Claims 1 or 2, wherein ~~said the~~ the polymer chain is hydrophilic.

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4 (Currently amended): The fuel cell of Claim 3, wherein ~~said the~~ the polymer chain ~~has a principal chain that is~~ includes a continuous alkyl base group, ~~or a co-polymer whose principal chain is a continuous alkyl base.~~

5 (Currently Amended): The fuel cell of Claim 1, wherein ~~said the~~ the polymers are a thermo-responsive and ~~undergo a~~ capable of volume phase transition in accordance with ~~the a~~ a temperature of the pure water.

6 (Currently Amended): The fuel cell of Claim 5, wherein ~~said the~~ the thermo-responsive polymers contract in water at temperatures of 40°C or higher, and expand in water at temperatures of 20°C or lower.

7 (Currently Amended): The fuel cell of Claim 6, wherein ~~said the~~ the polymer chain is includes N-isopropyl acrylamide, ~~or an N-isopropyl acrylamide co-polymer.~~

8 (Currently Amended): A fuel cell ~~characterized by having~~ comprising:
an electrode structure including a cathode, an anode and an electrolyte between the cathode and the anode;

a fuel gas passage configured to conduct fuel to the anode;

an air passage configured to conduct air to the cathode;

a separator configured to supply the fuel to the fuel gas passage;

a pure water channel configured to allow flow of pure water and permit the pure water to pass into the separator; and

a means for discharging the pure water in the pure water channel to outside of the fuel cell when the fuel cell is shut down.

9 (Currently Amended): The fuel cell of Claim 8, further ~~characterized by~~ comprising:

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means for measuring ~~at least one~~ a parameter selected from the group of either the flow rate of pure water flowing through the pure water channel of the fuel cell system ~~or~~ and the pressure of the pure water; and

means for controlling ~~said at least one of either the flow rate of the said pure water or the pressure of said pure water to~~ the parameter so as not to exceed a level that ~~does not exceed a~~ predetermined range.

10 (Currently Amended): A method of operating a fuel cell having a water channel with a polymeric material contained therein and a separator for supplying fuel to the fuel cell, the method comprising:

permitting water to flow through the channel and pass into the separator when operating the cell; and

holding the water in the polymeric material when the cell is not operating.